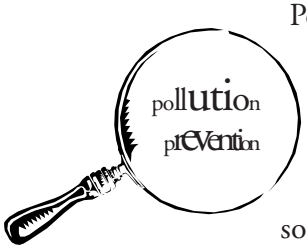
Pollution Prevention: What You Can Do At Your Facility

Fact Sheet

WHAT IS POLLUTION PREVENTION?



Pollution prevention means eliminating or minimizing the initial generation of waste at the source, or utilizing environmentally sound on-site and off-site reuse or recycling. Waste treatment, release or disposal is not considered pollution prevention. Incinerating with energy recovery is also not considered pollution prevention.

Waste means any material, energy or other resource that is not incorporated into product. Examples include surplus, obsolete, off-specification, contaminated or unused material and includes air emissions, water discharges, hazardous waste and solid waste.

WHY IS POLLUTION PREVENTION IMPORTANT?

Michigan's businesses create two type of physical outputs: products and waste. Products create revenues. Waste creates costs. Some of these costs follow.

Collection Costs

Maintenance personnel spend as much as 25 percent of their time collecting waste. Storing waste requires containers, compacting equipment and the use of valuable floor or dock space.

Transportation Costs

Waste must be transported from the generator to the treatment or disposal location. These costs usually include rising energy costs. The costs of transporting

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Why Reduce Waste, Waste Reduction: Getting Started, and Waste Reduction Overview

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solid wastes off site have increased significantly in many areas as landfill closings have forced haulers to go to more distant facilities. The costs of transporting hazardous wastes off site are high due to necessary permits, licenses and vehicles and because there are few permitted hazardous waste treatment or disposal facilities. This often results in long hauling distances.

Treatment and Disposal Costs

Waste must frequently be treated to meet permit limitations before it can legally be discharged, emitted or be otherwise disposed.

Production Costs

Waste is a clear indicator of incomplete use of resources and inefficient use of labor. It means that raw materials are being bought, but not used in a product manufactured for sale. Good inventory control can minimize outdated and obsolete stock and equipment.

Worker Safety Costs

Handling any waste has the potential of exposing the worker to a health risk or other dangerous situation. Hazardous material requires worker handling training and specialized equipment. Protection of workers handling any type of waste can add costs.

Liability Costs

Businesses that create waste, particularly hazardous waste, are increasingly liable for environmental problems waste might cause. They are paying higher insurance and higher damage premiums. Even though disposal facilities are more closely regulated now than in the past, waste has the potential to add future, unexpected costs to a business if contamination requiring a cleanup occurs. Also, the generator has ultimate responsibility for the handling of any waste from generation point to disposal and beyond, including hauling, storage and making sure contracted services will handle the waste properly.

Lost Resource Costs

Much business waste is composed of materials that can be profitably reused or recycled. Throwing these resources away is often like throwing out a new source of revenues. It is common to find businesses discarding perfectly good items that they then buy "new" from someone else. **Example:** large manufacturing facilities have been known to dispose of reusable corrugated containers nearly identical to those purchased for packaging products at other points in the facilities. Good pollution prevention practices will identify such opportunities for waste reduction and cost savings.

Storage Costs

Generated waste must be stored before disposal. Depending upon the degree of hazard, special permits, equipment and handling procedures may be necessary for storing waste. No matter what type of waste is generated, valuable facility space is necessary for storage.

Energy Costs

Good pollution prevention practice is good business and can reduce energy costs, including lighting and heating costs.

Maintenance and Cleanup Costs

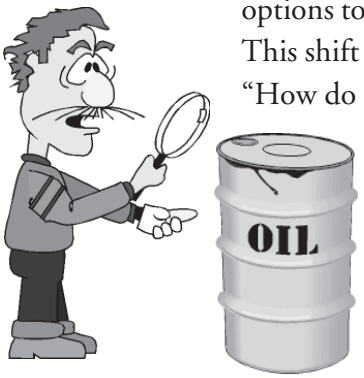
Spills and leaks are an indication of poor housekeeping and wasted raw materials. The cleanup of spills and leaks can be costly. It can also reduce the useful life of machinery and equipment.

Hazardous Material Costs

Required permits and routine monitoring, frequent inspections, increased safety and health concerns, protective equipment expenditures, high disposal and material costs, reporting and record keeping, spill reporting, potential fines, penalties, long-term liabilities and public concerns are all costs associated with using hazardous materials in your business. Material substitution and process and equipment modifications could lead to the complete elimination of, or major reductions in, the use of hazardous materials. Fewer hazards mean less costs for doing business

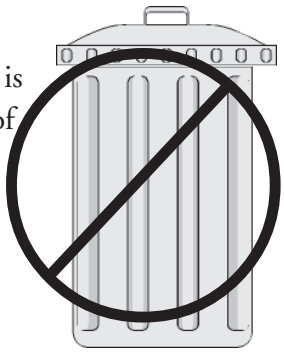
HOW DO I BEGIN?

Rethink the way you look at waste. Rethinking waste management means prioritizing reduction options to prevent waste. This shift in thinking from, "How do I get rid of it" to, "How do I prevent it" is at the top of the hierarchy for pollution prevention.



Reduce, Reuse and **Recycle** is still the slogan when thinking about pollution prevention. Using these three simple ideas you can address each waste stream. For example, if you see corrugated containers in your waste stream you may think of recycling as an option. Better yet, looking at your needs for these containers may help you address the problem at the source: Are the containers used by a supplier who could change to returnable, reusable containers? Is it possible to purchase materials in bulk so these packaging containers would not be required at all? Eliminating packaging altogether (source reduction) is the best option as long as product quality is maintained.

Reduce



Reduce the waste at the source. Source reduction is a philosophy or practice of not generating waste materials. Minimize the environmental and financial impact of waste by not creating it in the first place. Increase efficiency, substitute materials or change processes so that fewer waste materials are produced.

- **Renew your commitment to quality control.** Improving production efficiency will result in fewer rejected products and less waste. Improve worker training to reduce production of inferior products that are discarded as a waste. Improve inventory systems to reduce inventory needs and increase material handling efficiency. This can mean less waste because raw materials are kept from spoiling, warping or becoming obsolete. Faulty inputs can be sent back to suppliers providing a strong signal that quality counts.

- **Choose durable and repairable goods.** This extends equipment life and avoids creating discards. Negotiate service contracts. Practice regular maintenance.

- **Substitute inputs with less toxic and more recyclable materials.** Consider an alternative process such as substituting solvent-based with an aqueous-based parts cleaner.

- **Reduce input packaging.** Work with suppliers to reduce the amount of packaging that is sent to you by changing to bulk buying or eliminating unnecessary packaging. Insist that suppliers backhaul containers and packing materials.

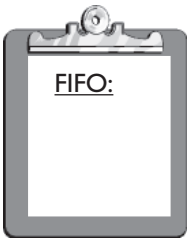
- **Look for less wasteful procedures in all areas of the operation from the office to the plant floor and beyond.** Any place waste is generated has potential for pollution prevention.

- **Establish good housekeeping practices.** Improving a business's housekeeping practices is often the easiest and least expensive way to reduce waste. Good housekeeping includes good inventory control and efficient operating procedures:

1) ***Inspect materials when they are delivered and return rejected materials.***

2) ***Keep storage and work areas clean and well organized, and label all storage containers.***

3) ***Keep records of material use so you can measure reductions.*** *Use the FIFO (First In, First Out) method of materials use. Mark the purchase date on items having limited shelf-life so that older materials are used before new ones are opened. Make this a priority assignment.*



4) ***Repair all leaks to prevent any additional loss. Practice preventive maintenance.***

5) ***Keep containers covered to prevent evaporation and spills.***

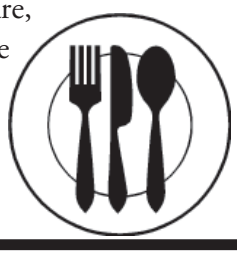
6) ***Keep waste streams separate to increase their potential for reuse, recycling or treatment.*** *Don't let a small amount of hazardous waste become a major problem by contaminating a larger amount of nonhazardous waste.*

Reuse

Reuse whenever possible. Each time a good is reused a new one is not manufactured, purchased or disposed. When designing or procuring products and packaging, consider the potential reuse of scrap, containers and other materials.

- **Recover and reuse cooling waters, used solvents, waste heat, plastic scrap, trimmings and other production materials to save money and materials.**
- **Work with suppliers to develop returnable containers and pallets.** Program implementation requires some up-front capitalization costs but you will save in disposal costs and your supplier will save on materials costs. This may keep your raw material or "piece price" costs down in the long run.

- **Buy remanufactured goods.** Remanufacturing involves the restoration of worn-out products to a like-new condition. Discarded products are disassembled, usable parts cleaned and refurbished, and the product is reassembled from old and new parts. Those materials commonly targeted for remanufacture include automotive parts and industrial equipment. By purchasing remanufactured goods, you reuse products that might otherwise have been disposed and support an important remanufacturing industry.
- **Choose reusables over disposables.** Reusable napkins, dinnerware, placemats tablecloths, coffee mugs and condiment containers are common waste reduction items for restaurants. In the office, use refillable pens and the second side of scrap paper for drafts, memos, scratch pads and telephone messages. Retailers can package sales in returnable or reusable containers. Manufacturers can reuse packing materials and pallets. Design products and systems for reuse.



Recycle

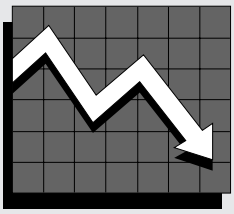
Recycle what's left. The waste streams of most commercial and industrial establishments contain high percentages of homogeneous, recoverable materials. Recycling can reduce disposal costs and sometimes generate revenues. Metals and paper are two materials that have been recycled for decades with glass and plastic also being commonly reclaimed. The recycling market is now well-established with new markets opening continually. Materials targeted for recycling should be segregated from waste at the point of generation to lower contamination and increase their value. Recycling requires planning for collection, storage, handling and transport.

- **Recycle on-site.** Return scrap and industrial solvents and oils to processing or manufacturing operations on-site.
- **Recycle off-site.** Secure a hauler, broker or end-user prior to implementing collection. Plan for the amount of on site processing or treatment that will be required before the material would be accepted off site.
- **Investigate materials exchange options.** One company's waste could be another's raw material. Explore an informal materials exchange for liquid, solid and hazardous waste with other companies or use the services of an organized materials exchange.

STEPS FOR POLLUTION PREVENTION AT YOUR FACILITY

STEP 1:

Get top management commitment to pollution prevention policies and goals. Support and direction from top management are critical to the development of company-wide pollution prevention policies. Include a waste reduction hierarchy in your policy development. Examine all waste streams for source reduction, reuse and recycling potential.



STEP 2:

Establish pollution prevention goals. Zero waste is an ambitious goal but has been used by some businesses with amazing results.

STEP 3:

Communicate policies with employees. Involve all individuals who will be most affected by operation changes, including maintenance staff, materials handling personnel and purchasing employees. Seek their ideas and input. Reward innovative suggestions. Some organizations have permanent waste reduction or pollution prevention teams to continually look at ways to improve efficiency at their facility and prevent pollution.

STEP 4:

Communicate the policies with customers and suppliers.

STEP 5:

Develop a plan of action. Planning for pollution prevention begins with prioritizing waste streams on the basis of being regulated, level of hazard, toxicity, volume, cost, ability to segregate materials and ease of their elimination or reduction. As the plan is developed, an incremental approach to reduction may need to be adopted. By using an easy first target, your plan can build upon success. Include completion dates for achieving goals. A thorough waste audit or assessment is always important in order to characterize waste streams and determine volumes and source reduction or recycling potential of various materials. A waste audit or assessment could:

- *List department functions and personnel involved.*
- *Count trash and other waste containers.*
- *Look into containers to see what has been put in them.*
- *Calculate total waste generation by looking at all material inputs (mass balance).*
- *Obtain information on janitorial and trash disposal routines.*
- *Obtain information on state and local, solid and hazardous waste rules and regulations.*
- *Identify special waste handling needs.*
- *Discuss recycling options with facility waste haulers.*
- *Calculate the cost and benefits of your plan.*

Other planning approaches could include targeting the highest volume, most hazardous, or costliest waste material. As waste streams are assessed for reduction potential, develop accounting systems that calculate the true cost of disposal and recognize benefits of pollution prevention. This means going beyond handling, transportation, treatment and disposal costs. Lost revenue of materials that could have been reused within the facility or sold as recyclables should be included in accounting systems as well as the value of the wasted input material.

Don't overlook opportunities for reducing waste at the point of generation (source reduction). You can increase operating efficiency by substituting materials or changing processes so that fewer waste materials are produced. Examples of source reduction include replacing disposable materials with reusable and recyclable materials or switching to returnable containers.

STEP 6:

Broadcast the plan for implementation and its results. A company-wide memo describing pollution prevention goals will help kick off your program. Solicit employee involvement, especially if you are planning a program that will require widespread employee participation, such as an office paper collection program. Often, employee volunteers can serve as "waste basket watchdogs," assisting with new employee orientation, distribution of collection containers and general trouble-shooting. Employee involvement can be encouraged through the use of incentives. Employees might be offered the opportunity to suggest changes that can result in company savings. A portion of these savings could be passed back to the employee or to his or her department.

Employee education and participation is critical to program success. Those who must change how they handle materials will need guidelines and training. Provision must be made to continue these educational efforts into the future to anticipate personnel turnover and a regular re-emphasis of the importance the company places on the program.

Develop a weekly or monthly waste report to monitor the success of your pollution prevention program, provide employee feedback and identify problem areas.

POLLUTION PREVENTION PREPARES FOR THE FUTURE

The transition from a disposable to a waste-conscious economy, forced by the rapidly growing financial and environmental problems of waste, will have a profound effect on how goods are designed, produced, distributed, sold and used. It is costly to control and manage waste, regardless of whether it is hazardous or solid, air emissions or water discharges.

As the public learns more about the state of the environment, demands for recycling and for environmentally sound production methods and products will grow. Some businesses are responding to the opportunities of this trend. They are providing products with more recycled materials and fewer "virgin" materials and identifying these products with recycling symbols, creating an environmentally friendly image for themselves and their products.

The combination of escalating waste costs, increased environmental controls and changing public demands will make pollution prevention a competitive necessity.